

# HYKEL HOSNI

---

## CURRENT POSITION

- Since 12/2021     **Professor of Logic** (Professore di prima fascia, MFIL-02)  
Department of Philosophy, University of Milan
- Since 09/2017     **Adjunct Professor of Logic and Methodology of the Social Sciences**  
Department of Social and Political Sciences, Bocconi University.

## Main professional service

- Editor of “The Reasoner”
- 

## MAIN RESEARCH INTERESTS

Logical foundations of reasoning and decision-making under uncertainty; the methodology of data-driven reasoning; logic-based artificial intelligence.

---

## EDUCATION

- 01/2002-11/2005   **PhD**, School of Mathematics, The University of Manchester.
- 11/1997-11/2001   **Laurea**, Department of Philosophy, University of Pisa.
- 

## PREVIOUS ACADEMIC EMPLOYMENT

- 2015-2021     **Associate professor** Department of Philosophy, University of Milan
- 2013-2015     **Marie Curie Research Fellow**, London School of Economics - Centre for the Philosophy of Natural and Social Science (CPNSS)
- 2007-2013     **Postdoc and Adjunct Professor**, Scuola Normale Superiore, Pisa
- 2005-2007     **Research Associate**, School of Mathematics, University of Manchester
- 2002-2004     **Research Associate**, ISTI-CNR, Pisa.
- 

## GRANTS

- 2024-2028     PI of *Reasoning with Data* (ReDa), Fondo Italiano per la Scienza (FIS1)
- 2021-2025     Local PI of *MOSAIC*, Horizon 2020 Marie Skłodowska-Curie RISE (GA-101007627)
- 2013-2015     PI of *Rethinking Uncertainty*. Marie Skłodowska-Curie Intra European Fellowship (FP7-PEOPLE-2012-IEF GA-327630)

---

## SELECTION OF PUBLICATIONS

### Articles

1. Corsi, E. A., Hosni, H., and Marchioni, E. (2024). *International Journal of Approximate Reasoning* Some notes on possibilistic randomisation with t-norm based joint distributions in strategic-form games. 166.
2. Hosni, H., and Landes, J. (2023). Logical perspectives on the foundations of probability. *Open Mathematics*, 21(1).
3. Baldi, P., Corsi, E. A., and Hosni, H. (2023). Logical Desiderata on Statistical Inference. Forthcoming in *Walter Carnielli on Reasoning, Paraconsistency, and Probability*, Springer's Series Outstanding Contributions to Logic.
4. Hosni, H., and Vulpiani, A. (2023). Algoritmi e Previsioni. *Sistemi Intelligenti*, 1, 143–155.
5. Corsi, E. A., Flaminio, T., and Hosni, H. (2023). A logico-geometric comparison of coherence for non-additive uncertainty measures. *Annals of Pure and Applied Logic*,
6. Corsi, E. A., Flaminio, T., Godo, L., and Hosni, H. (2023). A Modal Logic for Uncertainty: a Completeness Theorem. *Proceedings of Machine Learning Research*, 215, 119–129.
7. Baldi, P., and H. Hosni. 2022. “A Logic-Based Tractable Approximation of Probability.” *Journal of Logic and Computation*.
8. Corsi, E.A., Flaminio, T., Hosni, H. “Towards a Unified View on Logics for Uncertainty”. In: Dupin de Saint-Cyr, F., Ozturk-Escoffier, M., Potyka, N. (eds) *Scalable Uncertainty Management 2022 Lecture Notes in Computer Science*, pp.329–337. Springer, 2022.
9. Baldi, P., and Hosni, H. (2022). Probability and Degrees of Truth. In *The Logica Yearbook 2021* (pp. 1–18). College Publications, London.
10. Corsi, E. A., T. Flaminio, and H. Hosni “Scoring rules for Belief Functions and Imprecise Probabilities: A Comparison,” in Vejnarová J., Wilson N. (eds) *ECSQARU 2021. Lecture Notes in Computer Science*, vol 12897 pp. 301–313, Springer. 2021,.
11. Baldi P. and H. Hosni. “Logical Approximations of Qualitative Probability,” *Proc. Mach. Learn. Res. ISIPTA 2021*, vol. 147, pp. 12–21, 2021.
12. Corsi, E. A., T. Flaminio, and H. Hosni “When Belief Functions and Lower Probabilities are Indistinguishable,” *Proc. Mach. Learn. Res. ISIPTA 2021*, vol. 147, pp. 83–89, 2021.
13. Flaminio, T., L. Godo, and H. Hosni. “Boolean algebras of conditionals, probability and logic“. *Artificial Intelligence*, Volume 286, 2020, (Open Access)
14. Baldi, P. and H. Hosni. “Depth-bounded Belief Functions.” *International Journal of Approximate Reasoning* 123 (August). Elsevier: 26-4. 2020 doi.org/10.1016/j.ijar.2020.05.001 (Open Access)
15. Baldi P., D’Agostino M., Hosni H. 2020. “Depth-Bounded Approximations of Probability“. In: Lesot MJ. et al. (eds) *Information Processing and Management of Uncertainty in Knowledge-Based Systems. IPMU 2020. Communications in Computer and Information Science*, vol 1239. Springer

16. Hosni, H., and E. Marchioni. 2019. "Possibilistic Randomisation in Strategic-Form Games." *International Journal of Approximate Reasoning* 114: 204–25. doi:10.1016/J.IJAR.2019.08.008.
17. Flaminio, T., H. Hosni, and F. Montagna. 2018. "Strict Coherence on Many Valued Algebras." *Journal of Symbolic Logic* 83 (1): 55–69. doi:10.1017/jsl.2017.34.
18. Resteghini, C., A. Trama, E. Borgonovi, Hykel Hosni, Giovanni Corrao, Ester Orlandi, Giuseppina Calareso, et al. 2018. "Big Data in Head and Neck Cancer." *Current Treatment Options in Oncology* 19 (12). Current Treatment Options in Oncology: 62. doi:10.1007/s11864-018-0585-2.
19. Flaminio, T., H. Hosni, and S. Lapenta. 2018. "Convex MV-Algebras: Many-Valued Logics Meet Decision Theory." *Studia Logica* 106 (5): 913–45. doi:10.1007/s11225-016-9705-9.
20. L. Licitra, A. Tramaglia and H. Hosni. "Benefits and Risks of Machine Learning Decision Support System", *JAMA: Journal of the American Medical Association*. December 2017 DOI 10.1001/jama.2017.16627
21. Hosni, H., and A. Vulpiani. 2018. "Forecasting in Light of Big Data." *Philosophy and Technology* 31: 557–569. doi:10.1007/s13347-017-0265-3.
22. T. Flaminio, L. Godo, and H. Hosni, "On Boolean Algebras of Conditionals and Their Logical Counterpart", in A. Antonucci et al. (Eds.): *ECSQARU 2017, Lecture Notes in Artificial Intelligence 10369*, Springer. 2017. DOI: 10.1007/978-3-319-61581-3 23
23. M. D'Agostino, T. Flaminio, and H. Hosni. "Rational Beliefs Real Agents Can Have – A Logical Point of View." *Journal of Machine Learning Research: Workshops and Conference and Proceedings* 58, 2016.
24. T. Flaminio, L. Godo, and H. Hosni, "Coherence in the aggregate: A betting method for belief functions on many-valued events". *International Journal of Approximate Reasoning*, volume 58, pages 71–86, 2015.
25. M. Giaquinta and H. Hosni, "Mathematics in the social sciences: reflections on the theory of social choice and welfare", *Lettera Matematica Internazionale*, volume 3, pages 101-109, 2015.
26. T. Flaminio, L., Godo, and H. Hosni, "On the algebraic structure of conditional events", in *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, vol 9161, pages 106–116, Springer 2015
27. H. Hosni and F. Montagna, "Stability for non-standard imprecise probabilities", In A. Laurent et al. (Ed.) IPMU 2014, *Communications in Computer and Information Science*, n. 444 (pp. 436–445). Springer, 2014.
28. T. Flaminio, L. Godo, and H. Hosni, "On the logical structure of de Finetti's notion of event". *Journal of Applied Logic*, 12:3, pages 279–301, 2014
29. H. Hosni, "Towards a Bayesian theory of second-order uncertainty: Lessons from non-standard logics", in S.O. Hansson (ed.) *David Makinson on Classical Methods for Non-Classical Problems*, (pp. 195–221). Outstanding Contributions to Logic Volume 3, Springer, 2014.
30. T. Flaminio, L. Godo and H. Hosni, "Zero-probability and coherent betting: A logical point of view", In L. C. van der Gaag (Ed.), *ECSQARU 2013 Lecture Notes in Artificial Intelligence* no.7958, pp. 206-217, Springer, 2013.
31. G. Devetag, H. Hosni and G. Sillari, "You better play 7: Common knowledge versus mutual knowledge of advice in a Weak-link experiment", *Synthese* 190(8), 1351-1381, 2013.

32. M. Giaquinta and H. Hosni, “Mathematica italiana”, *Lettera Matematica Pristem* 82, 2012. ISSN: 1593-5884
33. M. Fedel, H. Hosni and F. Montagna, “A logical characterization of coherence for imprecise probabilities”, *International Journal of Approximate Reasoning*, Volume 52, Issue 8, 2011, Pages 1147-1170
34. H. Hosni and S. Marmi, “Matematica, ragionamento dell’incertezza e discrezionalità”, in G. Comporti (ed.) *Le Gare Pubbliche: Il Futuro di un Modello*, Editoriale Scientifica Napoli, 2010, pp. 27-40. ISBN: 978-88-6342-225-2
35. G. Casini and H. Hosni, “Default-assumption consequence relations in a preferential setting: Reasoning about normality”, in M. D’Agostino and C. Sinigaglia (eds.), *New Essays in Logic and Philosophy of Science*, College Publications, London, 2010, pp.52-66, ISBN 978-1-84890-003-5
36. H. Hosni, “Interpretation, coordination and conformity”, in O. Majer, A-V. Pietarinen and T. Tulenheimo (eds.), *Games: Unifying Logic, Language, and Philosophy* Springer, 2009, pp. 37-55, ISBN: 978-1-4020-9373-9.
37. G. Casini and H. Hosni, “A note on Cumulative Stereotypical Reasoning”, in C. Sossai and G. Chemello (eds.), *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*, Volume 5590 of Lecture Notes in Artificial Intelligence, pp. 590-601, Springer-Verlag Berlin Heidelberg 2009. ISBN 978-36-4202-905-9
38. H. Hosni and J.B. Paris, “Rationality as Conformity”, *Synthese*, Volume 144, Issue 2, Pages 249-285, 2005. ISSN: 0039-7857. Also reprinted in W. van der Hoek (ed.) *Uncertainty, Rationality, and Agency*, Springer 2006 ISBN 978-1-4020-4630-8
39. H. Hosni, M.V. Masserotti, and C. Renso, “Maximum Entropy Inference for Geographical Information Systems”, in G. Bordogna and G. Psaila (eds.), *Flexible Databases Supporting Imprecision and Uncertainty*, Studies in Fuzziness and Soft Computing, Vol. 203 pp. 269-291, Springer, 2006. ISBN 978-3-540-33288-6
40. H. Hosni, “A note on Bridges from Classical to Nonmonotonic Logic”, *Logic and Philosophy of Science*, Vol.3, No.2., 2005. ISSN:1826-1043.

### Monographs

- H. Hosni *Probabilità: come smettere di preoccuparsi e iniziare ad amare l’incertezza*, Carocci (Città della Scienza) 2018, ISBN 9788843090020.
- M. Giaquinta and H. Hosni *Teoria della scelta sociale e Teorema fondamentale dell’economia del benessere: Razionalità, coerenza, efficienza e equità*, Edizioni della Normale, 2015, ISBN:978-88-7642-537-0

### Edited volumes

- H. Hosni, G. Lolli and C. Toffalori (eds) *Le direzioni della ricerca logica in Italia 2* ETS, 2018.
- H. Hosni, G. Lolli and C. Toffalori (eds) *Le direzioni della ricerca logica in Italia*. CRM-Series, Edizioni della Normale, 2015, ISBN: 978-88-7642-570-7
- H. Hosni and F. Montagna (eds.), *Probability, Uncertainty and Rationality*, CRM-Series Vol 10, Edizioni della Normale, Pisa 2010, ISBN: 978-88-7642-347-5. Review: MR2742537 (2011f:03003)

### Book translation

H. Hosni, *Philosophical Lectures on Probability*, English translation of B. de Finetti's *Filosofia della Probabilità* A. Mura (Ed.), Springer Synthese Library , Vol. 340, 2008. ISBN:978-1-4020-8201-6.

Reviews:

- Jon Williamson, *Philosophia Mathematica* 18(1): 130-135, 2010.
- Enrico Scalas, *MathSciNet Mathematical Reviews* MR2759403 (2012f:60005)

---

## SELECTED INVITED TALKS

- 2023 “Inference in statistical inference”, Logic and Interactive Rationality LIRa – The Seminar of the Amsterdam Dynamics Group
- 2019 “Probability and logic” Ghent-Brussels Seminars in Logic, History and Philosophy of Science.
- 2016 “Logic, Probability and the Foundations of Uncertain Reasoning” Logic, Algebra and Truth Degrees 2016, Phalaborwa (South Africa) 28-30 June 2016 [Opening lecture]
- 2016 Mathematical Fuzzy Logic in Reasoning and Decision Making under Uncertainty, *Prague Seminar on the Future of Mathematical Fuzzy Logic*, Prague, 16–18. June 2016
- 2015 “Strictly coherent betting on real-valued events”, Coherence and Truth in Memoriam Franco Montagna, Pontignano 16-18 December 2015
- 2015 “The independence of irrelevant alternatives: A logical point of view”, Logic and AI seminar, Imperial College, London, 30 April 2015
- 2014 “Is probability *the* measure of uncertainty?.”, Logics for Social Behavior, Lorenz Centre, Leiden, 10-14 November 2014.
- 2014 “Rethinking the norms of rational belief and decision” Departmental Seminar, Philosophy, University of Kent, UK, 8 March 2014
- 2013 “The logical structure of de Finetti’s notion of event”, Decision Theory Seminar, Cambridge, 30 May 2013
- 2012 “Rationality under second order uncertainty”, LSE Choice Group, London, 25 January 2012.
- 2011 “Subjective probability as a normative theory of rational belief”, Statistics Seminar, Collegio Carlo Alberto, Torino, 6 May 2011
- 2008 “Uncertain reasoning based on non-classical logics”, MATHLOGAPS Training Workshop, Manchester July 7-11, 2008
- 2006 “Choosing rationally when bargaining is not an option”, *British Mathematical Colloquium - Logic Splinter Group*, Newcastle, April 10-13 2006.
- 2005 “Rational coordination without communication”, Department of Computer Science, The University of Liverpool, 18 October 2005.
- 2004 “Coordination, interpretation and conformity”, Human-Machine Communication Department, LIMSI-CNRS, Orsay, France, 16 November 2004.

---

## SELECTION OF EVENTS ORGANISED

2024 Logic for the New AI Spring 2, Lake Como School of Advanced Studies

2022 Logic for the New AI Spring, Lake Como School of Advanced Studies

2018 “Logic, Uncertainty and Games”, Lake Como School of Advanced Studies. <https://lucg.lakecomoschool.org/school-directors/>

2017 Probabilità, Rischio e Previsione: Strumenti per la costruzione di una cultura dell’incertezza, GSSI, l’Aquila 3-5 maggio 2017.

2013 Games and Decisions, SNS <https://crm.sns.it/event/275/organizers.html#title>

2010 Rationality, Heuristics and Motivation in Decision Making SNS <https://crm.sns.it/event/197/organizers.html#title>

2009 Probability, Uncertainty and Rationality”, SNS. <https://crm.sns.it/event/161/organizers.html#title>

2008 “Non-classical Logics: from Foundations to Applications”, SNS. <https://crm.sns.it/event/138/organizers.html#title>

Milano, March 6, 2024

Hykel Hosni